Recall that the secant function is defined as the reciprocal of the cosine function: $\sec(x) = \dfrac{1}{\cos(x)}$. In this problem, we will find some properties of the secant function.

Exercise 1 (a) *Recall that* $\cos(x) = 0$ *when* x *is an odd multiple of* $\dfrac{\pi}{2}$*:* $\ldots, -\dfrac{3\pi}{2}, -\dfrac{\pi}{2}, \dfrac{\pi}{2}, \dfrac{3\pi}{2}, \dfrac{5\pi}{2}, \dfrac{7\pi}{2}, \ldots$. *Select the domain of the cosecant function.*

Multiple Choice:

(i) $(-\infty, \infty)$
(ii) $(-\infty, 0) \cup (0, \infty)$
(iii) $\cdots \cup (-2\pi, -\pi) \cup (-\pi, 0) \cup (0, \pi) \cup (\pi, 2\pi) \cup \cdots$
(iv) $\cdots \cup \left(-\dfrac{5\pi}{2}, -\dfrac{3\pi}{2}\right) \cup \left(-\dfrac{3\pi}{2}, --\dfrac{\pi}{2}\right) \cup \left(-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right) \cup \left(\dfrac{\pi}{2}, \dfrac{3\pi}{2}\right) \cup \cdots$ ✓

(b) *Recall that cosine is an even function. Secant is*

Multiple Choice:

(i) *odd.*
(ii) *even.* ✓
(iii) *odd and even.*
(iv) *neither odd nor even.*

(c) *On the interval* $\left(0, \dfrac{\pi}{2}\right)$*, secant is*

Multiple Choice:

(i) *increasing.* ✓
(ii) *decreasing.*
(iii) *neither increasing nor decreasing.*

(d) *Using knowledge of famous angles,* $\sec\left(\dfrac{\pi}{3}\right) = \boxed{2}$.

(e) *Which of the following graphs is the graph of* $\sec(x)$*?*

Multiple Choice:

(i) *A*
(ii) *B* ✓
(iii) *C*
(iv) *D*

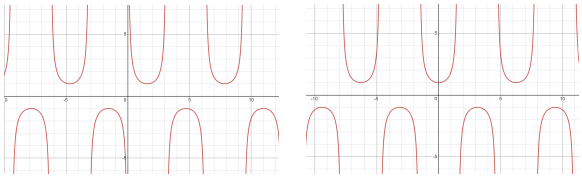

Figure 1: A on the left and B on the right

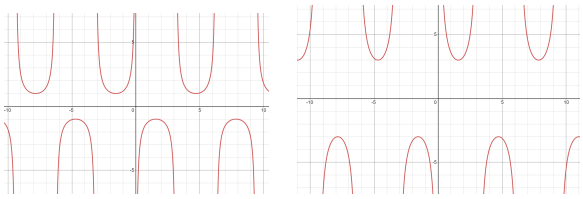

Figure 2: C on the left and D on the right

